температурные зависимости некоторых датчиков, особенно сильно они проявлялись в области низких температур (рис 1.).

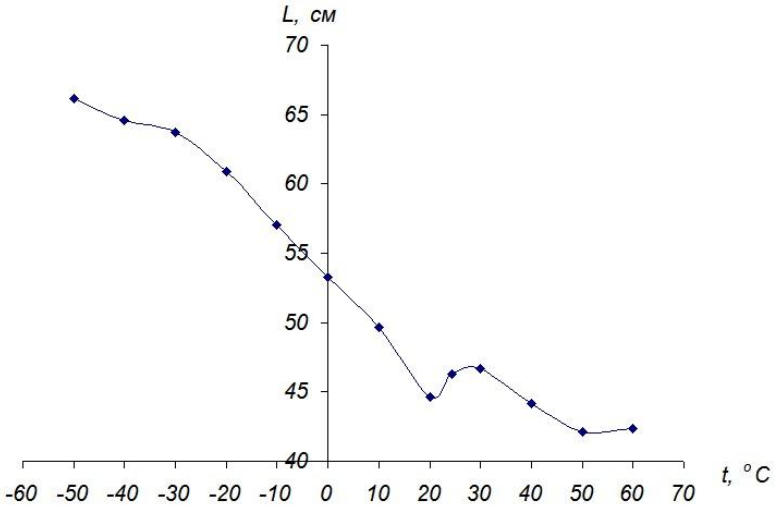

Рис. 1. Зависимость показаний дальномера от температуры окружающей среды.

Полученные данные заставляют задуматься об использовании электронных устройств в районах с низкими температурами. Вполне возможно, что работу таких датчиков придется производить в совокупности с датчиками измерения температур, и данные корректировать согласно текущим показаниям данных датчиков, а возможно и самостоятельное конструирование необходимых электронных компонент.

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MODELING OF MAGNETO-OPTICAL IMAGES IN THE LONGITUDINAL SENSITIVITY OF STRAY FIELDS OF THE MAGNETS OF SIMPLE GEOMETRIC SHAPES

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Observation of magneto-optical (MO) contrast in the field image of the magnet using meridional Kerr effect geometry allows you to get more information about the angular distribution of the planar field component [1].

In our study the regularities of formation of MO-images in longitudinal sensitivity near the surface of magnets of different geometric shapes had investigated. In the

case of **M** || **n** (**M** - magnetic moment of the magnet, **n** - normal to the plane of observation) MO-images have a complex structure. In a first approximation, the picture is composed of triangular sectors which arise as a result of dividing geometric shape angles by bisectors. Singular point of source or sink type [1] is formed by intersection of the bisectors. The contrast between the triangles falls with increasing shape angles. Computer simulations showed, that this structure of MO-images can be given by the field of lattice of point dipoles, magnetic moments are oriented perpendicular to the plane of observation. The configuration of these images depends essentially on the geometry of the flat shape, comprising dipoles. A qualitative explanation of the experimental results and the results of computer simulation is made.

In the case of **M** ⊥ **n** MO-images have a characteristic appearance – they include a pair of singular "source-sink" points which are characterized by narrow diagram of the angular distribution of brightness. Computer simulations showed that this structure MO-images can be given by the lattice of point dipoles, magnetic moments are oriented parallel to the plane of observation. The characteristic intensity distribution is observed in the MO-images just of a single dipole field (Fig. 1 b). Growth in the number of dipoles (k) leads to narrowing of dark and bright areas around singular points of simulated MO-image, that is in agreement with pictures observed experimentally on the rectangular surface of the magnets (Fig. 1c).

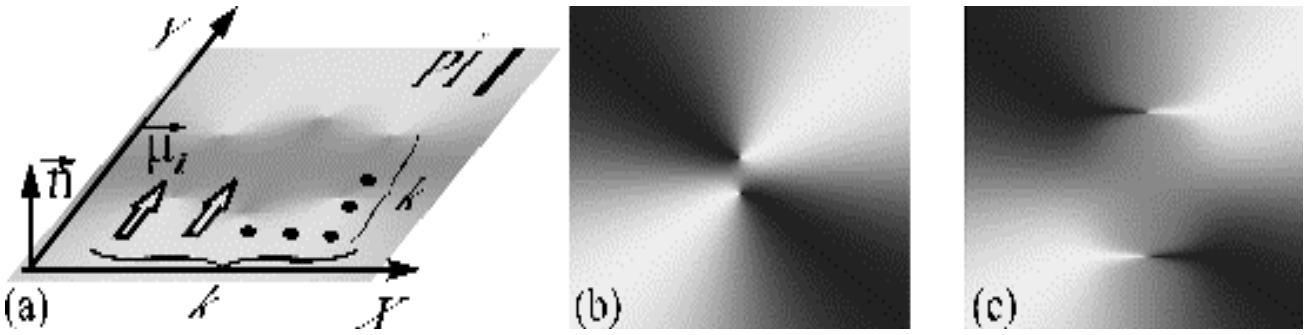

Fig. 1. The lattice of point dipoles in the field simulation (a) and MO-images of the field of dipole (k = 1, b), and (k = 10, c).

1. V. E. Ivanov, J. Magn. and Magn. Mater., 324, (2012) 2572-2578.